Follow up of infants born to HIV infected mothers

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Aim

- Make an early diagnosis
- Prevent mortality in infants exposed to HIV
- Identify signs of complications early in those who are HIV infected

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What predisposes infants to have early HIV complications?

- Immune system takes 4-6 years to mature
  - Poor HIV-CTL responses – seen by 2 years (adults – within weeks)
  - Diminished control of HIV replication – 5 to 6 years after infection to decline to “set point” (4 months in adults)
  - Surrogate markers (CD4 & viral load) are less reliable than in adults

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Natural History of HIV Infection in Children

- Perinatal transmission = primary infection
- Limited immune response in infants = very high viral load. Declines slowly over 1-2 years
- Bimodal presentation
  - Rapid progressors with AIDS or death during first 12-24 months
  - Slower progressors with variable patterns of disease
  - Rate of progression associated with a variety of risk factors: timing of transmission, prematurity, mode of delivery, genetics, early viral load, maternal health, viral strain

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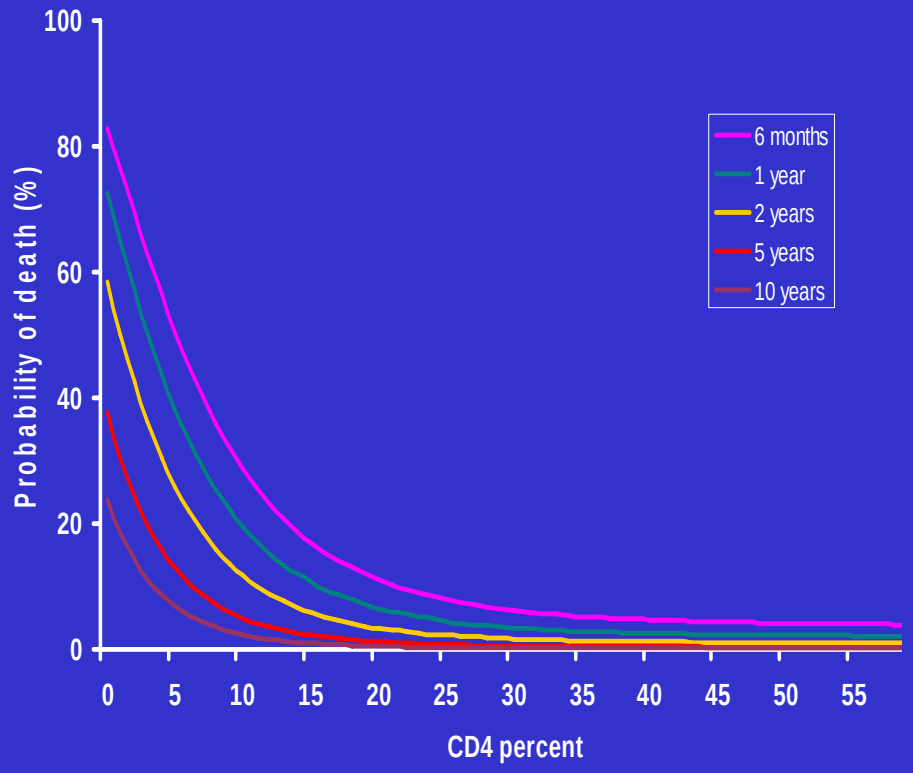
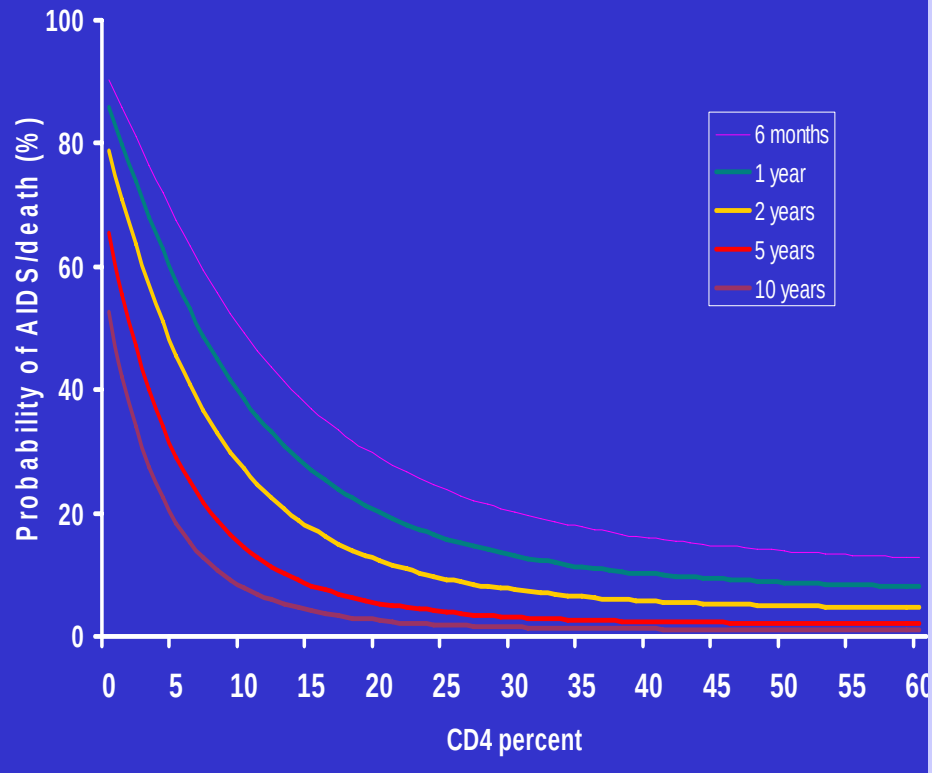
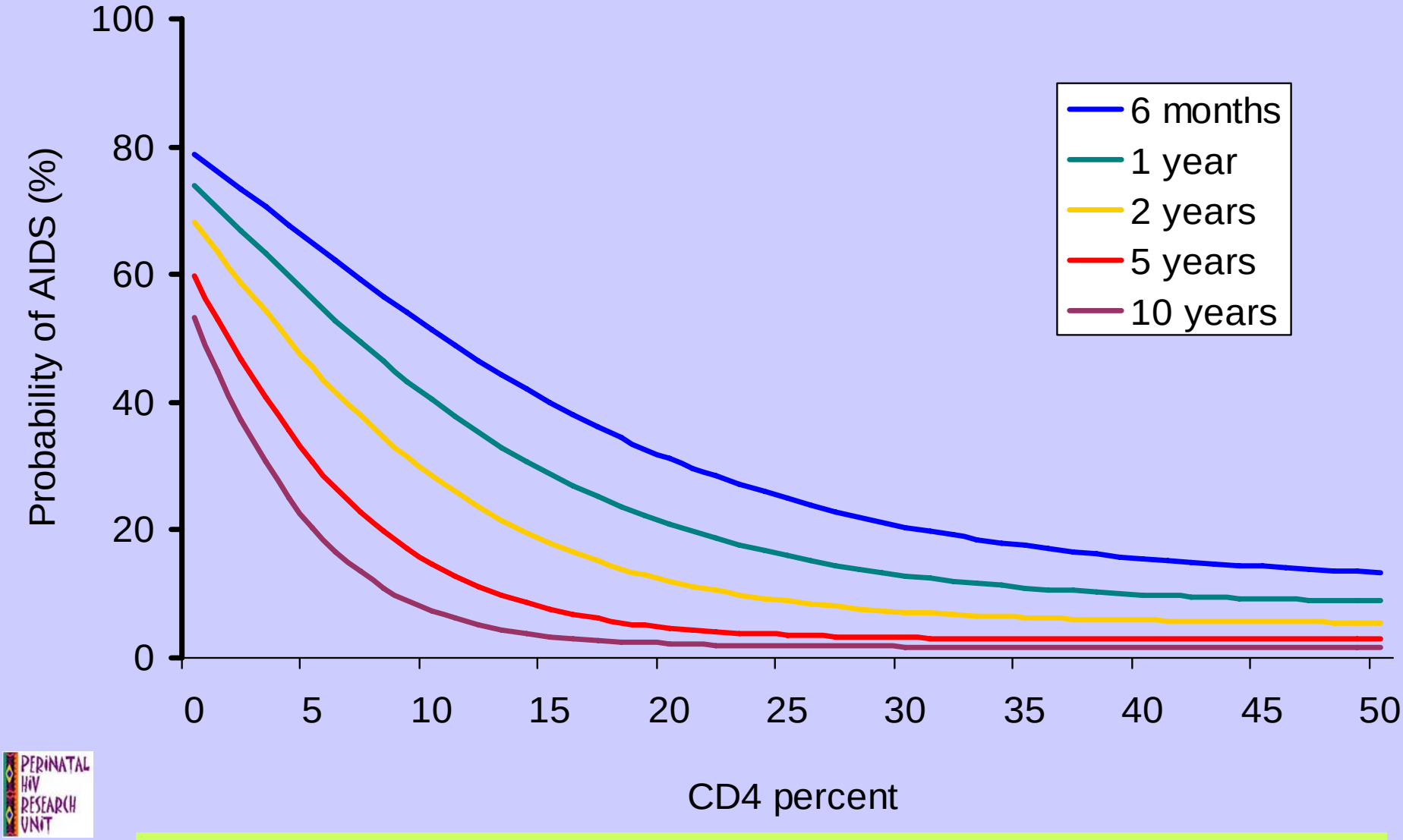
Probability of death/AIDS within 12 months, by CD4% and age *(HPPMCS, 2003)*





Probability of AIDS within 12 months



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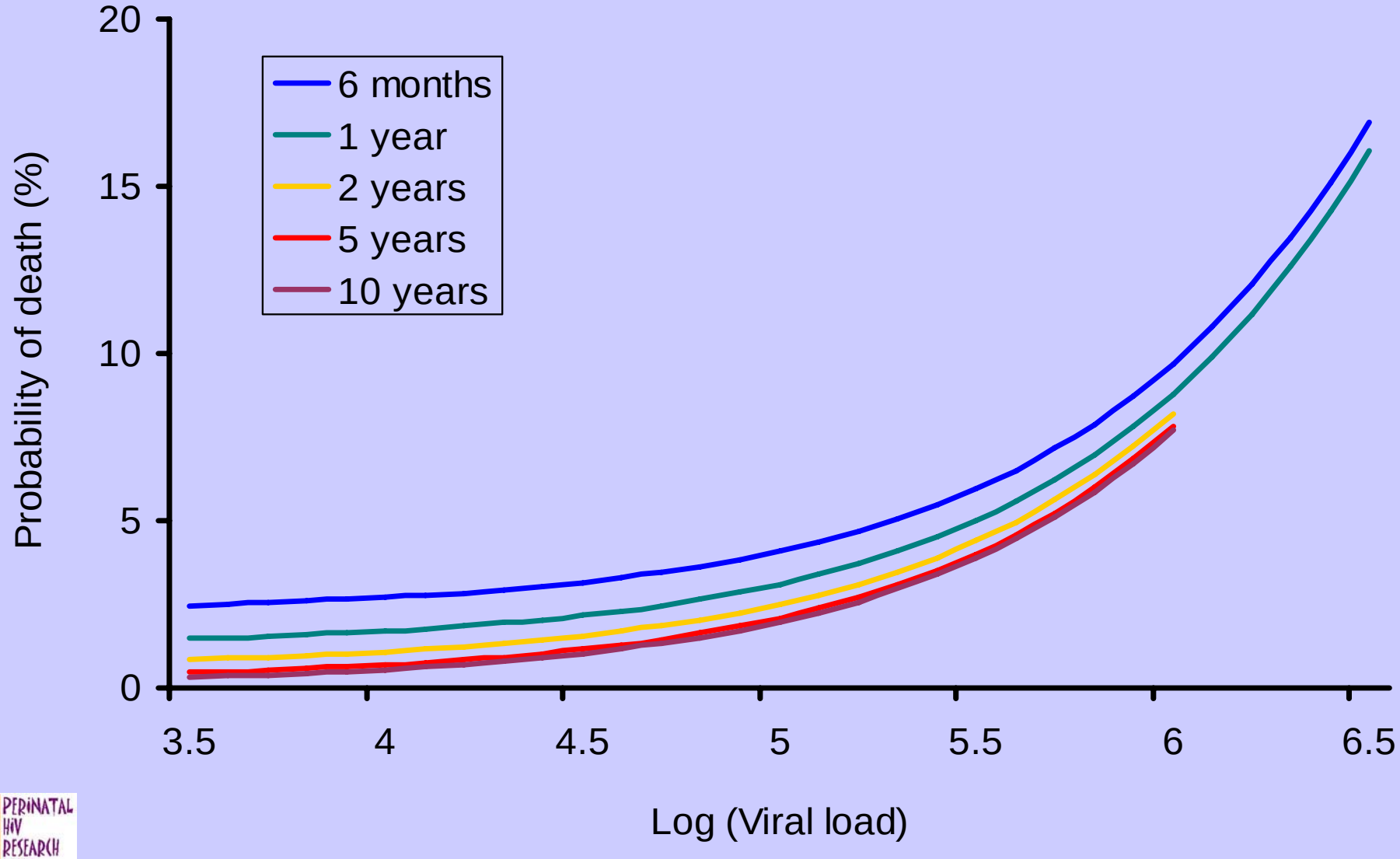
Probability of death within 12 months



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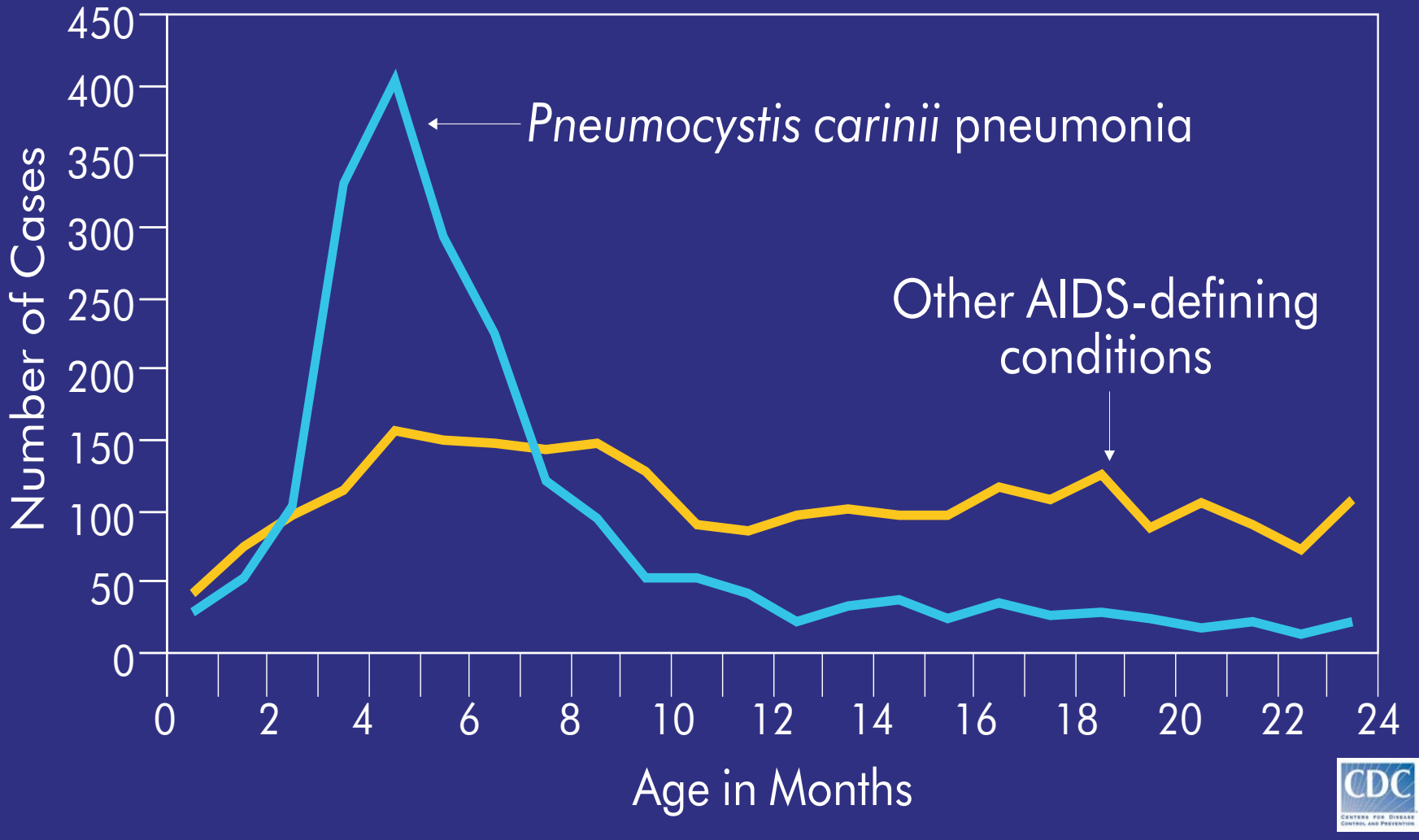
AIDS-Defining Conditions by Age at Diagnosis for Perinatally-Acquired AIDS Cases Reported through 2000, United States



Natural History of HIV Infection in Children

- 20-25% of HIV infected children progress to AIDS or die in infancy

- The HPPMCS data show that:
  - Progression risk is high in younger children at all CD4 percent but increases rapidly below 20-25%

- Mean age of onset of symptoms varies
  - 5.2m (Tovo 92)

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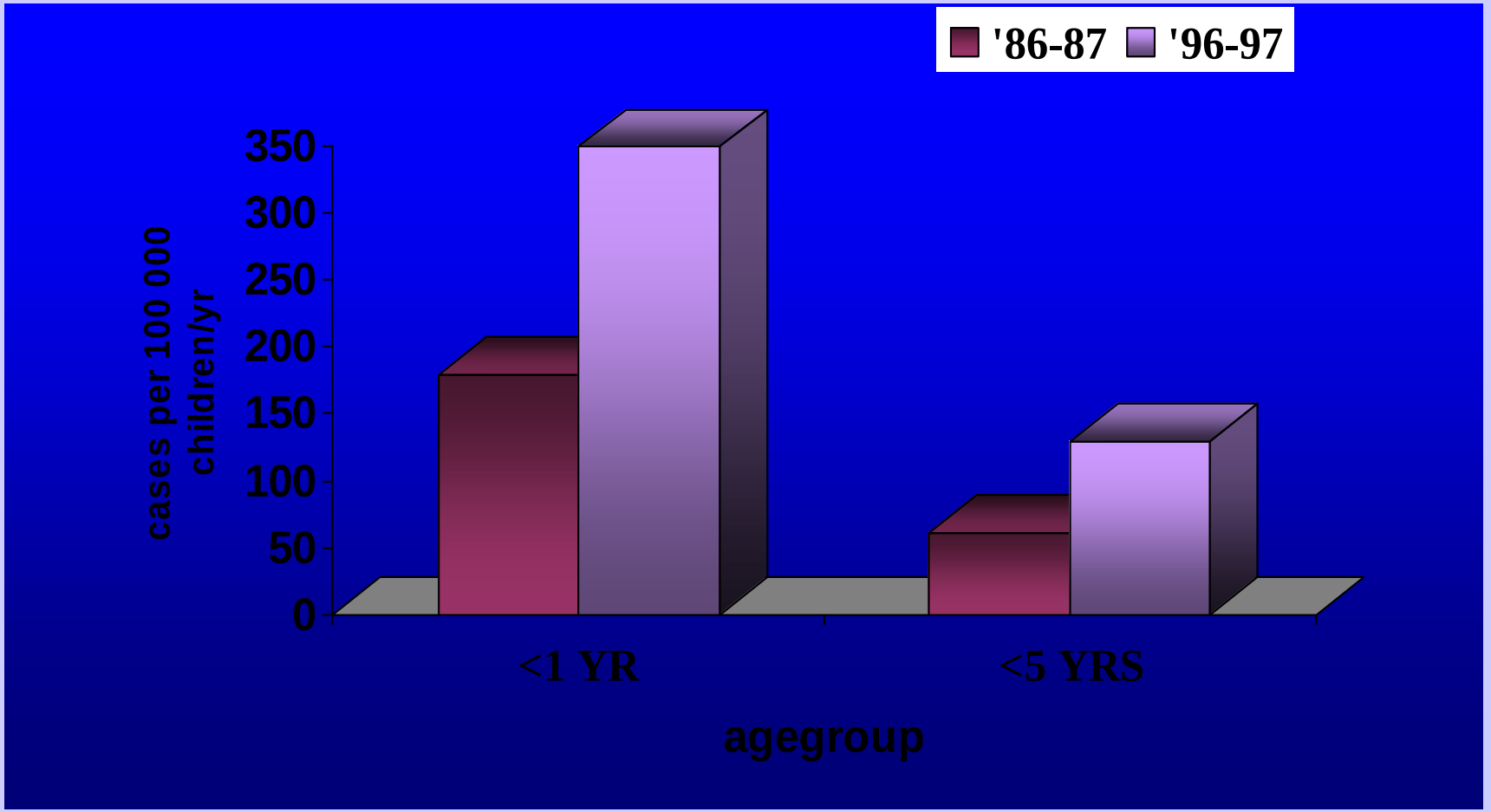
INCIDENCE RATES OF BACTEREMIC PNEUMOCOCCAL PNEUMONIA IN SOUTH AFRICA



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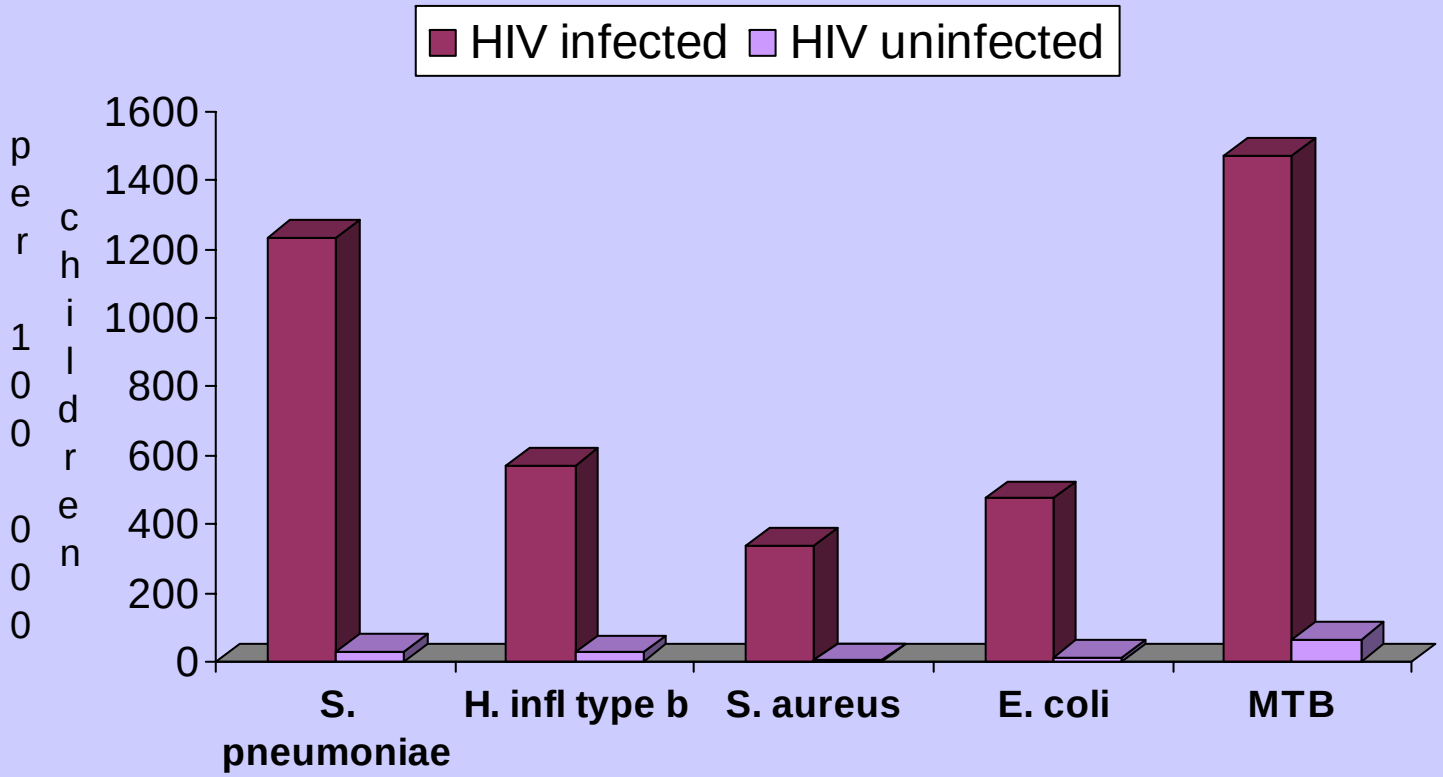
Karstaedt A, et al PIDJ 2000

ESTIMATED RELATIVE INCIDENCE RATES (/100 000) OF SEVERE BACTERAEMIC PNEUMONIA (in less than 2y old)



S. pneumoniae	H. infl type b	S. aureus	E. coli	MTB
RR=42.9 (20.7-90.2)	RR=21.4 (9.4-48.4)	RR=49.0 (15.4-156.0)	RR=97.9 (11.4-838.2)	RR=22.5 (13.2-37.6)

Madhi SA et al. CID 2000

Current guidelines/HIV exposed children

- Counseling of the mother
- Growth monitoring
- Nutritional support
- Immunization
- Vitamin A supplementation

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How do you determine that an exposed child *IS NOT* HIV-infected?

- An non-breast feeding infant with a negative virologic test (DNA PCR) done at > 6 weeks of age, is generally considered ***not*** infected
- A non-breast feeding infant 18 months or greater is ***not*** HIV-infected if one antibody test is negative
- A breast feeding infant 18 months or greater is ***not*** HIV-infected if one antibody test is negative three months after cessation of breast feeding

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How do you determine if a child *IS* HIV-infected?

- An infant with a positive virologic test (DNA PCR) at any time. Repeat virologic test will be done if the child is asymptomatic

- An infant 18 months or greater ***is*** HIV-infected if one antibody test is positive. Perform HIV Elisa at 12 and, if positive repeat at 18 months

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Prophylaxis for PCP

- Treatment should start at 4 weeks of age to avoid interference with bilirubin conjugation
- May consider starting at 6 weeks for children receiving long course AZT for PMTCT
- **Length of treatment**
  - HIV exposed: until infection has been ruled out and mother no longer breastfeeding
  - ALL HIV infected infants in the first year of life need prophylaxis irrespective of CD4
- Toxicities include rash, fever, bone marrow suppression (neutropenia)

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Primary Prophylaxis: TB

- Routine TB prophylaxis for HIV infected children is NOT recommended currently either as primary or secondary prophylaxis

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Primary Prophylaxis: TB (US guidelines)

- Tuberculin Skin Testing (TST) is recommended, but not mandated, annually beginning at 24 months for all HIV-infected children (5 units PPD intradermally)

- Who should receive treatment?
  - TST > 5mm
  - Child < 3yrs living in household with adult with active disease

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When should ART be initiated?

- CD4 percentage < 20% if asymptomatic
- WHO Stage III/IV
- Recurrent admissions or prolonged hospitalizations
- Choice of Regimen: d4T/3TC/Kaletra
- Role of resistance?

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Barriers/Challenges

- Large number of children is an enormous challenge and shortage of resources remains an obstacle
- Identification of baby at delivery and NVP dose to the baby
- Identification of baby at PHC clinics

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Challenges/Early diagnosis

- Expertise for taking blood from small babies
- DBS test not widely available
- Logistics for identifying and referring babies
- Link early testing to other points of care

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Challenges/Infant formula

- Procurement
- Distribution
- Ongoing counseling on safe infant feeding
- Chances of mixed feeding are high in case the mother did not disclose her HIV status
- Surveillance of infant feeding

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Summary

- Initial visits for HIV-exposed infants should focus on diagnosis of infection status, routine health maintenance and PCP prophylaxis
- Diagnosis of HIV infection in infants requires virologic confirmation
- Visits for HIV-infected infants and children should focus on evidence of disease progression, disease classification, determination of OI and ARV eligibility
- Close follow-up with early recognition and diagnosis of complications can result in earlier treatment and better outcomes for patients

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Prevention of mortality

- Early recognition and diagnosis of complications can result in earlier treatment and better outcomes for patients
- Knowledgeable healthcare providers can assist in prevention and early recognition of complications

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